

Comparative Analysis of Fresh and Smoked Catfish Marketing in Ekiti and Ondo States of Nigeria

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Abstract

The study aimed at comparing fresh and smoked fish marketing in Ondo and Ekiti states, Nigeria, using a total of 120 respondents randomly selected from the two states. The study revealed that most catfish sellers were female, married and young, literates with more than ten years of marketing experiences. About 49.17, 33.33 & 17.50 percent of them were involved in marketing both fresh and smoked catfish, fresh catfish and smoked catfish respectively through direct sales to consumers and retailers. The marketing of both fresh and smoked fish is profitable, however, smoked catfish marketing is found to be more profitable than fresh catfish marketing. Though the variable cost of processing and marketing smoked catfish (₦537.60) is higher than that of fresh catfish (₦262.50), the return on investment of smoked catfish (0.60) is higher than that of fresh catfish (0.48). This however shows that, the marketing of smoked catfish is efficient and worthwhile in the long run when compared to fresh catfish. The study recommends; introducing more smoking kilns and guarantee minimum price policy for catfish production; effective utilization of catfish associations for credit accessibility and scale up production and capacity building of farmers in smoking kiln utilization

1. Introduction

Aquaculture, according to the World Fish Center (2009a), is the world's fastest growing food production sub-sector. It is growing at an annual rate of 8.9% since 1970 and contributes significantly to the world economy. According to the Bureau of Statistics (2014), fisheries contribute about one percent of the Nigerian GDP and 3.24% of the Agriculture GDP. Small-scale fisheries and aquaculture provide employment for over 41 million people, majority of which live in the developing countries. Specifically, the post-harvest sector provides employment for the poor in the developing economy. According to the World fish centre (2009b), the ratio of fishers to people employed in the post-harvest sector is estimated at approximately 1:3. There is also a strong gender aspect to fish-based livelihood activities, with women heavily involved in post-harvest processing and marketing, making the post-harvest sector an important one for strengthening women's livelihoods.

The population of Nigeria according to World Bank (2014) estimate is 168.8 million. Fish consumption accounts for about 35 percent of animal protein consumption in Nigeria (USAID, 2014). Fish is the cheapest source of animal protein consumed by the average Nigerian and accounts for about 50% of the total animal protein intake (FDF, 2009). According to USAID (2010), the average Fish consumption in Nigeria is 9.8 kg/caput, while the demand for fish is 1.4 m MT/annum. Recent data show that Nigeria produced just over 600,000 metric tons of fish in 2007 (Kingsway, 2013). Consumer demand, on the other hand, was reported at 2.66 million metric tons and was met only in part by imports of about 740,000 metric tons that same year (USAID, 2014). This report confirms the fact that domestic demand for fish in Nigeria could not be met only by dependence on artisanal fisheries (Ojo and Fagbenro 2004).

Nigeria needs to increase domestic fish supply by at least 700,000 metric tons per year to eliminate dependence of fish importation and meet the domestic market. According to Olusola and Ajayi (2013), fish farming has the potential to help expand the resource base for food production and reduce the pressure on conventional sources of fish that are harvested faster than they can be regenerated.

Fish is a widely accepted source of animal protein with no religious bias or taboos in Nigeria. It is available in fresh, smoked, dried and frozen forms. According to Abe (2012), Catfish grown in ponds or caged fish farms are now competing with imports.

Marketing and distribution of fish is as important as its production. It involves all activities carried out from landing sites to the point of utilization. Such activities include collection of fish, processing and preservation (smoking of fish using regulated oven), transportation to consumers, pricing, buying and utilization (Crammer *et al.*, 2001). These processes ascertain that the best products are available at the right time to fully satisfy the consumers' needs (Okoh *et al.*, 2008; Moses, 1992).

Women are usually responsible for fish processing and marketing (FAO, 1977). Although men sometimes assist their wives in drying, smoking, or grilling but women are primarily responsible for these activities. Women usually sell fresh fish in small quantities at local markets or to wholesalers. They may also sell processed dried or smoked fish. Men may sell fresh fish to a cooperative or will sell fresh or processed fish in large quantities to traders.

In recent times, the production of catfish increases significantly in Nigeria. The government encouraged catfish Agriculture through the provision of credit facilities to farmers. There are some fish farmers associations in several states of Nigeria. Most of the catfish farmers encountered marketing challenges; this is compounded by lack of storage facilities, hence they could not sell their fish fresh at appropriate prices. An attempt to resolve the challenge prompts the issue of value addition. Farmers have access to Modern Smoking kilns, this increase their ability to sell catfish either in fresh or smoked form. Research findings have not proofed any marked difference between the nutritional content of fresh and smoked fish. For instance, the Harvard medical publications (2011) senior scientist with Norway's National Institute of Nutrition and Seafood Research affirmed "the composition of omega-3 fatty acids calculated as a percentage of the total lipids [fats] does not change during the smoking process." Also, a nutrition study commissioned by Acme Smoked Fish Corporation in Brooklyn, N.Y., of its smoked salmon showed that the omega-3 levels were comparable to those in fresh salmon. Literatures on the marketability of fresh and smoked catfish are scarce in Nigeria, and most importantly in Ekiti and Ondo states where a huge number of farmers currently involved in catfish agriculture. Evidences abound that despite the fact that a huge proportion of rural dwellers engaged in farming, majority of them are living below the poverty line of \$125 per day. One begins to wonder, why this is so and what could be done to increase the income of the rural dwellers. According to Monawave (2010), Catfish consumption now in Nigeria is a delicacy different in the middle 1980's when fish consumption is regarded as for those who might not afford to buy meat. Also, the recent increase in the number of catfish marketers warrants investigating how this category of farmers could increase their farm income. How do the catfish farmers fear in terms of market? What proportions of the farmers sell their fish fresh or smoked? Could value addition make any significant difference in the catfish income? if yes, at what level? Since markets can be focal points for rural development, this motivates embarking on a comparative study of fresh and smoked catfish marketing in Ondo and Ekiti states of Nigeria.

2. Methodology

2.1. Study Area: The study was carried out in Ekiti and Ondo States of Nigeria. Ekiti State is situated between $4^{\circ}45'$ and $5^{\circ}45'$ East of the Greenwich meridian, and latitude $7^{\circ}15'$ and $8^{\circ}5'$ North of the Equator, while Ondo state lies between latitudes $5^{\circ}45'$ and $8^{\circ}15'$ North of the Equator and longitude $4^{\circ}3'$ and $6^{\circ}0'$ East of the Greenwich meridian. Ekiti State was created on October 1, 1996. The State was carved out of the Old Ondo State. The State comprises of sixteen Local Government Areas (LGAs). Agriculture is the biggest occupation in the State providing employment and income for approximately 75% of the population (Ekiti State Ministry of Agriculture, fisheries and forestry resources, (Annual report 2009). Also, Ondo States comprises of eighteen Local Government Areas with Seventy five (75%) percent of the State population engaged in farming. Agriculture contributed up to 70 percent of the State's Gross Domestic Product (GDP) (Ondo State Ministry of Agriculture, Fisheries and Forest Resources, Annual Report, 2006).

2.2. Sampling techniques: The study makes use of both Primary and secondary data. Three local government areas were purposively selected from each state. The list of registered fish farmers in the local government areas was collected from the Ministry of Agriculture, Fisheries and Forest products. Twenty respondents were randomly selected from each LGA, thus making a total of 120 respondents. A well-structured questionnaire was used in collecting data from the respondents while the secondary data was obtained from periodicals, journals, magazines and the internet. Descriptive statistics such as means, frequency counts and percentages were used to analyze the socio-economic characteristics of fish marketers while Profitability analysis was employed in determining the profit margin and returns on investment of fresh and smoked Catfish production. The profit (π) analysis equation is given as:

$$\pi = TR - TVC$$

Where π = Profit per kg of fish sold

TR = Total Revenue

TVC = Total Variable Cost

$$\text{Return on investment} = \frac{\sum A_i}{\text{Total Revenue}} = \frac{\text{Total V.C}}{\text{Total Revenue}}$$

The market operational efficiency was computed as follows:

$$ME = \frac{\text{value added by marketing}}{\text{Cost of marketing service}} \times 100\%$$

Profit margin = total revenue – total variable cost

$$\text{Returns on investment} = \frac{\text{Totals variable cost}}{\text{Total revenue}}$$

3. Result and Discussion

3.1. Socio economic characteristics of the respondents

Data in table 1 shows that the age of the respondents ranges from 18-62 years with a mean age of 39.4. This shows that most of the fish marketers in Ondo and Ekiti states are still young and are expected to be able to carry out marketing functions effectively and efficiently. A large percentage (74.17%) of the respondents was female and mostly married (70.83%). This corroborates the FAO (1977) report that women are generally involved in processing and marketing of fish. The large percentage of women involved in fish marketing in the two states might be a reflection of the small scale production level of most fish farmers, which provides avenue for the active engagement of women marketers. Also some men sees marketing as women's job, hence it provides opportunity for the division of labour among family members in that while the heads of the family engaged in fish production, the wives and children, as the case may be will be involved in the processing and marketing. Educational level of the respondents revealed that 4.17 percent of the respondents have not attended any formal institution before, 17.50% had primary education, and 37.50 percent had secondary education. 24.17 percent received adult education, 1.67 percent had quranic education, while 15 percent had tertiary education. It could be said that majority of the respondents are literates hence are expected to be able to read and adopt new innovations on fish marketing. The primary occupation of most of the respondents (65.0%) is fish farming while the secondary occupation is crop production. it could be affirmed that majority of the fish marketers belong to the farming family. In terms of fish marketing experience, most of the respondents have been selling fish for more than 10 years and are expected to know and utilize all the intricacies of fish marketing to enhance their livelihoods.

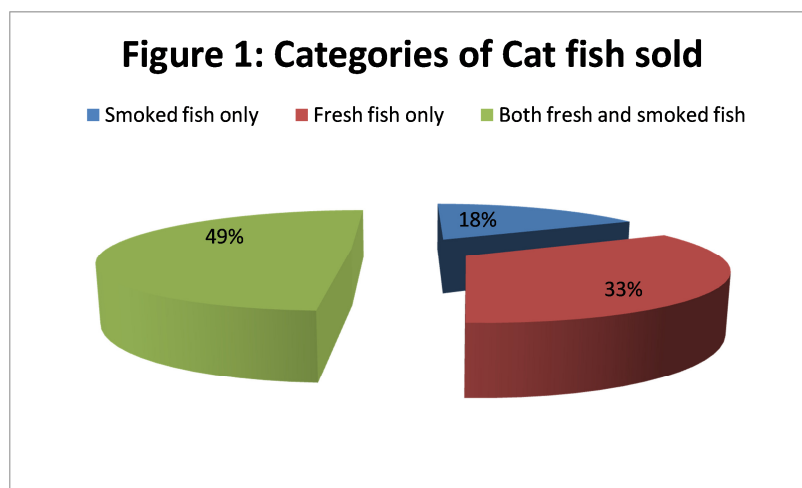
Table 1. Socio-economic characteristics of respondents

Variable	Frequency (N=120)	Percentage
Age (in years)		
16 – 25	20	16.67
26 – 35	24	20.00
36 – 45	35	29.17
>45	41	34.17
Mean (39.4)		
Gender	31	31
Male	89	89
Female		
Marital Status		
Single	35	29.17
Married	85	70.83
Level of Education		
No education	05	4.17
Primary education	21	17.50
Secondary education	45	37.50
Adult education	29	24.17
Quranic education	02	1.67
Tertiary education	18	15.00
Primary Occupation		
Fish farming	78	65.0
Crop production	20	16.67
Animal production	20	16.67
Civil servants	02	1.67
Secondary occupation		
Fish farming/ marketing	05	4.17
Crop production	75	62.50
Animal production	28	23.33
Trading	12	10.0
Years of experience in fish marketing		
< 10 years		
10-20 years	25	20.83
20-30 years	66	55.00
Above 30 years	12	10.00
	07	5.83

3.2. Categories of Catfish sold

Figure 1 shows that 33.33 percent of the respondents were involved in the marketing of fresh catfish, 17.50

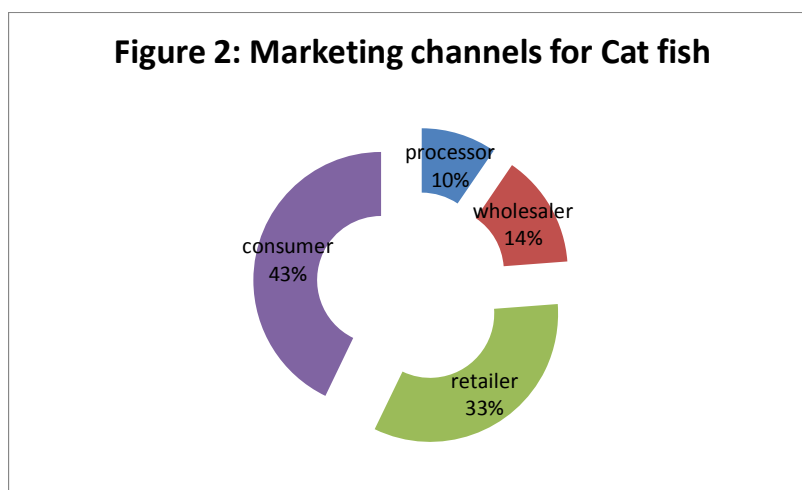
percent are into smoked fish marketing, while about 49.17 percent were into marketing of both fresh and smoked catfish. It could be said that most of the cat fish marketers were involved in the selling of both fresh and smoked cat fish. The selling of the duo by the respondents might result from the necessity to prevent the harvested unsold fresh fish from spoilage.



Source: Field Survey, 2012.

3.3. Marketing channels for Cat fish

The various marketing channels exploited for the sales of cat fish in Ondo and Ekiti states are the processors (10%), wholesalers (14%) & retailers/ restaurants & hotels (33%) respectively and final consumers (43%) (Figure 2). It could be said that most of the cat fish in the study area are mostly to the consumers. This is expected as direct selling has high margin potentials when compared with selling to the processors. The high percentage of retailers involved in cat fish marketing might be as a result of the high demand for cat fish by restaurants and hotels, which are joints for pepper soup enriched with cat fish (delicacies for evening relaxation). The low percentage of sales to the processors might be due to the presence of fewer processing industries in the area and the desire to maximize profit.



Source: Field Survey, 2012.

3.4. Profit Margin Analysis of Fresh Catfish and Smoked Catfish production

The result of the profit analysis and returns on investment per kg of fresh and smoked catfish is presented in table 2. The result reveals a profit margin of ₦287.50 and ₦362.40 per kg for fresh and smoked catfish respectively. Also, the return on investment for fresh and smoked catfish was ₦0.48 and ₦0.60 respectively. Analogically, this is equivalent to 48% and 60% returns. This implies that, for every one naira invested 48 kobo and 60 kobo would be realized from the marketing of fresh and smoked catfish respectively. It could be inferred that the sales of smoked cat fish is more profitable than that of fresh cat fish. This is expected as a result of value addition. Value-added agriculture according to ISU (2013), has been touted as the solution to the problems

facing farmers and rural residents. Value addition is claimed to increase income and reduce financial stress in the farm sector and lead to the revitalization of rural communities. Value added agriculture potentials lies in creating long term solutions rather than short term fixes. It allows upward movement in the food chains; however, participation in value added business ventures requires new sets of skills, team work, communications and conflict management skills (ISU (2013).

Table 2. Cost and Returns of catfish marketers.

Fresh Catfish		Smoked Catfish	
Function variable cost	Cost (N)	Variable cost	Cost (N)
A1 fingerling	10.00	A1 cost of fish	450.00
A2 feed	200.00	A2 processing costs	10.00
A3 vaccine/medication	2.50	A3 labour costs	10.00
A4 Labour	5.00	A4 transportation	12.00
A5 Transportation	20.00	A5 packaging cost	10.00
A6 Market charges	12.50	A6 handling costs	7.50
		A7 market charges	12.50
A7 contingency (5% of total cost)	12.50	A8 contingency	25.6
∑ ai total variable cost	262.50	∑ ai total variable cost	537.60
b. total revenue	550.00	b. total revenue	900.00
C profit margin	287.50	c. profit margin	362.4
D returns on investment	0.48	d. returns on investment	0.60

Source: Field Survey, 2012.

4. Summary and Conclusion

The study was carried out to compare fresh and smoked fish marketing in Ondo and Ekiti state of Nigeria. A total of 120 respondents were randomly selected from the list of fish farmers association in the two states while a structured questionnaire was used in data collection. The study revealed that most of the cat fish sellers in the study area were female, married & young, literates with more than ten years of marketing experiences. Most of them were involved in selling both fresh and cat fish, very few respondents were involved in selling only dry fish. Marketing channels exploited mostly by the sellers includes direct consumers and the retailers. The study shows that the marketing of both fresh and smoked fish is profitable in the study area. However, smoked catfish marketing is a more profitable and worthwhile to invest on in the long-run than fresh cat fish. Though the variable cost of processing and marketing smoked catfish (N537.60) is higher than that of fresh catfish marketing (N262.50), but the return on investment of smoked catfish marketing (0.60) is higher than that of fresh catfish marketing (0.48). This however shows that, the marketing of smoked catfish is efficient and worthwhile in the long run when compared to fresh catfish. This justifies the importance of value addition to agricultural commodities and the positive impact it could have on farmer's income and livelihoods. The findings are an icebreaker to different ways in which farmers with various enterprises could enhance their profit margin through value addition. For instance, a maize producer should think deeply of the extra benefit of allowing the maize to dry before selling, going further, the additional benefits to be derived if shelled, sorted and packaged to be more attractive to consumers, who are always willing to pay more for satisfying goods and services.

5. Recommendations

Based on the findings, the following recommendations are proposed:

- More modern smoking kilns should be made available to the cat fish sellers for utilization
- There is the need for capacity building of cat fish marketers in the use of smoking kilns to enhance the production of high quality smoked fish
- Government should embark on the construction of rural feeder roads to allow for easy and cheap flow of cat fish from rural to urban centers where the demand is high.
- Guarantee minimum price policy for catfish production should be introduced to enhance the benefits accrued from cat fish production by the farmers
- The cat fish associations should make effective use of group formation in assessing credit facilities necessary to increase their scale of production and marketing
- More processors should be encouraged to embark on cat fish marketing. This will enhance the continual availability of cat fish products as and when due.
- There is the need for research focus on packaging of cat fish for value addition

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